

WHAT IS CLAIMED IS:

1 1. An integrated memory system, comprising at least a non-volatile memory and
2 an automatic storage error corrector, characterized in that the memory system
3 comprises circuit means, functionally independent, each of them being responsible
4 for the correction of a predetermined storage error; at least one of said means
5 generating a signal to ask a correction being external to the memory.

1 2. A system according to claim 1, characterized in that said memory is
2 connected to a controller by means of an interface bus and said means are
3 incorporated both in the memory and in the controller.

1 3. A system according to claim 1, characterized in that in the memory said
2 means comprise:

3 circuits for the coding required to correct two errors;

4 a logic for calculating the syndrome;

5 a circuit for correcting a single error;

6 a logic for detecting more than one error.

1 4. A system according to claim 3, characterized in that said means also
2 comprise:

3 a logic for bringing to the controller:

4 a one-or-no-error-corrected data ;

5 the uncorrected error; and

6 the calculated syndrome .

1 5. A system according to claim 2, characterized in that said means comprise a
2 circuit for generating a signal activated to request the external correction of an error
3 by said controller.

1 6. A system according to claim 3, characterized in that said coding block is
2 located immediately downstream of the input terminal of said memory and performs
3 a vector product proportional to the number of parity bits and obtained through the
4 synthesis of a corresponding logic function.

1 7. A system according to claim 6, characterized in that said logic for calculating
2 the syndrome uses again the parity calculation circuit of the coding block.

1 8. A system according to claim 3, characterized in that said circuit for correcting
2 a single error comprises a block for decoding a single error effective to recognise
3 each of the several syndromes associated to a single error to activate, through a
4 corresponding vector, the correction of the corresponding bit.

1 9. A system, comprising:

2 a first circuit operable to store data having associated therewith at least one
3 storage error of a plurality of storage-error types, the first circuit operable to correct a
4 first-type error of the plurality of storage-error types; and

5 a second circuit coupled to the first circuit, the second circuit operable to
6 correct a second-type error of the plurality of storage-error types.

1 10. The system of claim 9 wherein the second circuit is operable to generate a
2 signal requesting correction of a third-type error of the plurality of storage-error
3 types.

1 11. The system of claim 9 wherein the first circuit is further operable to determine
2 at least one syndrome associated with the at least one storage error.

1 12. The system of claim 9 wherein the first circuit is further operable to detect the
2 second-type error.

1 13. The system of claim 9 wherein the second circuit corrects the second-type
2 error in response to a signal generated by the first circuit.

1 14. The system of claim 9 wherein the first circuit comprises a non-volatile
2 memory.

1 15. The system of claim 9 wherein:

2 the first circuit is disposed on a first integrated circuit; and

3 the second circuit is disposed on a second integrated circuit.

1 16. The system of claim 9 wherein the first and second circuits are disposed on
2 an integrated circuit.

1 17. A memory device, comprising:

2 a storage portion operable to store data having associated therewith at least
3 one storage error of a plurality of storage-error types;

4 a first circuit operable to correct a first-type error of the plurality of storage-
5 error types; and

6 a second circuit operable to generate a signal indicating detection of a
7 second-type error of the plurality of storage-error types.

1 18. The device of claim 17, further comprising a third circuit operable to determine
2 at least one syndrome associated with the at least one storage error.

1 19. A method, comprising:

2 storing, in a memory location of a device, data having associated therewith at
3 least one storage error of a plurality of storage-error types; and

4 correcting, at the memory location, a first-type error of the plurality of storage-
5 error types.

1 20. The method of claim 19, further comprising generating, at the memory
2 location, an interrupt-request signal indicating detection of a second-type error of the
3 plurality of storage-error types.

1 21. An electronic system, comprising:

2 a first integrated circuit having a memory operable to store data having
3 associated therewith at least one storage error of a plurality of storage-error types,
4 the memory operable to correct a first-type error of the plurality of storage-error
5 types; and

6 a second integrated circuit coupled to the first circuit, the second integrated
7 circuit having processor operable to correct a second-type error of the plurality of
8 storage-error types.